



# Polymer- & Soft-Matter-Seminar

## Prof. Thomas Heinze

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### “New products from polysaccharides – simple chemistry with great effect”

**Tuesday,  
29<sup>th</sup> May 2018**

**at: 5.15pm**

**VDP4 1.27,  
Von-Danckelmann-Platz 4,  
06120 Halle**

While the commercial chemistry of polysaccharides is limited due to the low reactivity of the heterogeneous reactions, homogeneous chemistry opens paths for the design of novel and highly engineered structures. Thus, there is a need to find efficient solvents for cellulose that will be discussed to some extent. However, to design novel functional materials, not only homogeneous reactions applying special solvents but also the conversion of activated and organo-soluble polysaccharide derivatives are in the center of recent interest. The conversion of both tosylates (1) and phenylcarbonates (PPCs, 2, with different substituents in the aromatic ring) of cellulose have proven to be versatile starting materials to get novel products with amazing structures efficiently. Cellulose tosylates and PPCs dissolve in common organic solvents and can be efficiently converted with a broad variety of amines, amino alcohols, amino acids and various other nucleophiles yielding products with interesting properties including novel zwitterionic polymers, self-healing polymers, gene transfer materials, and polymers for biofunctionalization.

- (1) Th. Heinze et al., Biofunctional materials based on amino cellulose derivatives—a nano biotechnological concept, *Macromolecular Bioscience* 16 (2016) 10-42.
- (2) Th. Elschner, Th. Heinze, Cellulose carbonates: A platform for promising biopolymer derivatives with multifunctional capabilities, *Macromolecular Bioscience* 15 (2015) 735-746..